PHILIP MORRIS RESPONSE TO OSHA RFI

Question 92: "If OSHA determines, on the basis of adequate evidence, that regulatory action is needed to protect employees from adverse health effects related to indoor air quality, what elements do you believe such regulation should include? Please provide the basis for your suggested element(s)."

Response:

Our review of the scientific data indicates that nonsmoker exposure to PTS constituents in the workplace is minimal. Typical markers used for estimating PTS exposure include carbon monoxide and nicotine. Monitoring under typical, realistic conditions in public places, restaurants and workplaces indicates that carbon monoxide levels in indoor atmospheres are not significantly different in areas where smoking is allowed compared to areas where smoking is not permitted. Although smoking and nonsmoking areas can be distinguished by ambient nicotine levels, the reported nicotine levels in smoking areas are many times below the occupational exposure limits. Studies indicate that typical measurements of nicotine in indoor atmospheres where smoking is permitted range from an exposure equivalent of 1/100 to less than 1/1,000 of one filter cigarette per hour. This means that a nonsmoker would have to spend from 100 to 1,000 hours or more in an office, restaurant, or public place where smoking was permitted in

order to be exposed to the nicotine equivalent of smoking a single cigarette.

PTS similarly plays a minor role in "sick building syndrome." A review of four large databases on sick building syndrome investigations, including NIOSH, Health and Welfare Canada, T.D. Sterling and Associates, Ltd., and Healthy Buildings International, reveals that PTS played a contributing role in less then 5% of all the building complaints investigated. Thus, a focus on PTS in an attempt to address poor indoor air quality would be both misdirected and inadequate. As the above databases suggest, a ban on workplace smoking would have had no effect on complaints regarding indoor air quality in over 95% of the sick buildings investigated to date.

Instead of attempting to regulate the complex issue of indoor air quality through efforts to examine and control every substance that may be found in the indoor environment, data indicate that acceptable indoor air quality can be achieved in most workplaces through adequate ventilation. Specifically, the ventilation rates prescribed in ASHRAE Standard 62-1989 are expressly designed to "control carbon dioxide and other contaminants with an adequate margin of safety, and to account for variations among people, varied activity levels, and a moderate amount of smoking."

The effectiveness of ASHRAE Standard 62-1989 for dilution and removal of PTS constituents and other substances in indoor air, including bioaerosols and radon, has been evaluated by scientists. In 1990, researchers presented results of a study comparing the effects of increased ventilation recommended by ASHRAE 62-1989 in areas where smoking is permitted and in areas where it is prohibited.[1] Through the aid of computer models, the researchers demonstrated that the quality of air in areas where smoking is permitted does not differ significantly from the quality of air in nonsmoking areas, where both areas are supplied with fresh air at the level recommended by ASHRAE 62-1989. The ventilation rates recommended by the ASHRAE standard are comparable to the rates prescribed for indoor areas in Scandinavia, Japan and Germany.[2]

Should the need for regulatory action on indoor air quality be determined by OSHA, it would be advisable to frame measures consistent with the approach of defining the performance goals desired, and allowing employers broad flexibility in how to meet these goals. This general approach has been suggested recently by Dwight Lee in a 1991 publication. In his review, Lee provides recommendations for proposed regulatory action on indoor air quality.[3] He writes:

> If political decision makers determine that indoor pollution levels are excessive in the

absence of government action, then the goal should be to reduce that pollution to acceptable levels and to do so at least cost. Assume, for example, that the government has determined that indoor air quality in all commercial establishments, workplaces, and buildings open to the public should meet some specified standard. After the government establishes such a standard, for government policy then to impose specific abatement procedures on those responsible for indoor pollution levels would not be efficient. Instead, efficiency requires that the procedure for satisfying the indoor air quality standard be determined by those who -- as residual claimants (either private owners or public managers) -- possess the greatest information and motivation so as to satisfy that standard at least cost.

If one has the flexibility to meet indoor air quality standards at least cost, then a variety of responses surely will occur. In some cases, of course, the response will involve restricting cigarette smoking. But such restrictions will not likely be the only -- or even the most important -- means of improving indoor air quality. One can expect that restricting everything from the type of new carpet installed to the location of office supplies will play a role in reducing indoor air pollution in the most efficient manner. And in nearly all cases, restricting items and activities will be complemented -- if not eliminated -- by paying attention to installing and maintaining proper ventilation systems.

. . . if government policy established an indoor air quality standard, then no justification exists for government restrictions on smoking. To the extent restrictions on smoking are an appropriate response to the problem of indoor pollution, they will be imposed more efficiently by those with the most information and motivation to meet the indoor air quality standard at least cost.

OSHA is urged, if the need for regulation and/or guidelines on indoor air quality is demonstrated as a result of the RFI process, to develop a comprehensive but flexible approach to total indoor air quality in the workplace. To that end and consistent with OMB Policy Directive A-119, OSHA should consider and evaluate already existing consensus standards and guidelines on indoor air quality and, in so doing, give consideration to a performance-based approach.

Ventilation Rates

OSHA may want to consider the ventilation rates currently set forth in ASHRAE Standard 62-1989 ("Ventilation for Acceptable Indoor Air Quality") as minimum ventilation rates in indoor workplace environments for new and renovated buildings. These ASHRAE ventilation rates were specifically designed to offer consensus industry standards addressing potential complaints about indoor air quality. Consistent with these guidelines, reasonable smoking in the workplace can be accommodated. In those instances where smoking lounges are utilized by an employer to assist in accommodation, ASHRAE 62-1989 currently sets forth additional ventilation rate parameters for such spaces. The current ventilation rate provisions of ASHRAE 62-1989 reflect consensus standards of experts in that field.

HVAC Operation and Maintenance

OSHA may want to consider and evaluate an HVAC operational requirement that HVAC systems shall be operated continuously during working hours except during emergencies, repairs or in such other circumstances as identified by OSHA. A requirement for periodic inspection, maintenance and monitoring of HVAC systems may be warranted to assure proper operation, efficiency, general hygiene, and bioaerosol control. In a similar context, guidance on proper air filtration techniques and applications and guidance on proper temperature and humidity ranges may be helpful in developing a sound IAQ standard. ASHRAE Standard 52-76 (filtration) and ASHRAE Standard 55-1981 (humidity and temperature) may be of assistance to OSHA in this regard.

Design, Construction, Renovation of Buildings or HVAC Systems

Because an otherwise effective systems approach to good indoor air quality can be influenced by construction and remodeling, OSHA may want to consider requiring employers to maintain acceptable indoor air quality during periods while work is being performed on the workplace facility (e.g., remodeling, reroofing, painting and similar activities). When replacement or substantial renovation or alteration of the HVAC system is undertaken, OSHA should consider requiring that the HVAC system be updated so as to provide at least

the minimum ASHRAE ventilation rates currently specified in ASHRAE 62-1989. Similarly, OSHA may want to consider addressing the unique indoor air problems which may be associated with new buildings being "commissioned" or occupied for the first time.

Conclusion

Scientific studies regarding indoor air quality reveal that numerous substances affect the indoor work environment and can give rise to symptoms of sick building syndrome and other complaints regarding indoor air. A common theme that runs through the literature, however, is that the principal factor associated with indoor air quality complaints is inadequate ventilation. Thus, to the extent that OSHA determines that a need exists for regulatory action, it is recommended that OSHA frame its regulations in terms of an overall performance standard which will address inadequate ventilation, rather than through efforts to control each specific substance that may be found in indoor air. To this end, the ventilation rates set forth in ASHRAE Standard 62-1989 stand as the most commonly recognized ventilation standard designed to address complaints about indoor air quality. If OSHA determines regulatory action is warranted, adoption of ventilation rates at least equivalent to those set forth in a general consensus standard like ASHRAE 62-1989 would constitute a well-reasoned approach that has been scientifically shown to improve indoor air

quality and, at the same time, would allow employers flexibility in accommodating the wishes of their diverse workforces.

REFERENCES

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3. Lee, D. "Environmental Economics and the Social Cost of Smoking," Contemporary Policy Issues 9(1): 83-92, 1991.